

What is claimed is:

1. An data transport interface, comprising:
5 a transceiving unit, configured to receive and transmit data which accords with USB (Universal Serial Bus) specification;
 a detecting unit, configured to detect the data received by the transceiving unit, so as to determine whether to convert the received data into data which accords with a particular specification; and
10 a conversion unit, configured to convert the received data into the data which accords with the particular specification when determining that the received data should be converted into the data which accords with the particular specification, and to convert the transmission data which accords with the particular specification into data which accords with the USB specification for transmission via the transceiving unit.

15 2. The interface of claim 1, wherein the conversion unit comprises:
 an unpackaging unit, configured to unpackage the received data into the data which accords with the particular specification.

20 3. The interface of claim 1 or 2, wherein the conversion unit comprises:
 a packaging unit, configured to package the transmission data into the data which accords with the USB specification.

25 4. The interface of any one of claims 1 to 3, wherein the particular specification is MPEG specification.

30 5. The interface of claim 4, wherein the conversion unit further comprises:
 a P/S conversion unit, configured to convert parallel synchronous transmission data which accords with the MPEG specification into serial asynchronous data which accords with the USB specification;

wherein the data which accords with the USB specification includes an integer multiple of packets which accord with the MPEG specification.

5 6. The interface of claim 5, wherein the conversion unit further comprises:

a S/P conversion unit, configured to convert the received serial asynchronous data which accords with the USB specification into parallel synchronous data which accords with the MPEG specification.

10 7. The interface of claim 6, wherein any one of the data which accords with the USB specification and the data which accords with the MPEG specification comprises at least one of service data and control information, the control information being used to control operations of a device equipped with the interface.

15 8. The interface of claim 7, wherein the service data comprises at least one of audio data and video data.

20 9. The interface of claim 7, wherein the control information comprises at least one of information for implementing PnP function, information on resource allocation and information on the transmission rate to be used.

25 10. The interface of claim 9, wherein the control information may be transmitted in a data transfer mode of bulk data transfer or interrupt data transfer in the USB specification.

30 11. A digital signal processing apparatus, comprising:
an interface of any one of claims 1 to 10; and
a processing unit, configured to perform any operation of playing, decrypting and storing the signals received via the interface.

12. The digital signal processing apparatus of claim 11, further comprising:

5 a RF processing unit, configured to demodulate the RF signals received by the digital signal processing apparatus, to transmit the demodulated signals via the interface.

13. The digital signal processing apparatus of claim 11 or 12, wherein the processing unit comprises:

10 a playback unit, configured to play the signals received via the interface.

14. The digital signal processing apparatus of claim 13, further comprising:

15 an audio decoding unit, configured to decode the audio signals received via the interface, and to provide the decoded audio signals to the playback unit for playing.

16. The digital signal processing apparatus of claim 14, further comprising:

20 a video decoding unit, configured to decode the video signals received via the interface, and to provide the decoded video signals to the playback unit for playing.

25 16. The digital signal processing apparatus of any of claims 13, 14 or 15, being a digital TV receiving apparatus.

17. The digital signal processing apparatus of claim 16, further comprising:

30 a control unit, configured to extract a control command from the signals received via the interface;

 wherein the playback unit plays the signals received via the interface according to the control command.

18. The digital signal processing apparatus of claim 16, further comprising:

a control unit, configured to extract a control command from the signals received via the interface;

5 wherein the RF processing unit is further configured to transmit the control command.

10 19. The digital signal processing apparatus of claim 17, wherein the control command further comprises EPG (Electronic Program Guide) information.

15 20. The digital signal processing apparatus of claim 19, further comprising:

a graphics display unit, configured to display the EPG information according to the control command.

21. The digital signal processing apparatus of claim 16, further comprising:

20 a software update unit, configured to store the software data received via the interface and to update the software.

22. The digital signal processing apparatus of claim 16, further comprising:

25 a channel and tuner control information generation unit, configured to generate channel and tuner control information to choose a corresponding RF channel according to user requirement;

the channel and tuner control information is transmitted via the interface.

30 23. The digital signal processing apparatus of claim 11 or 12, wherein the processing unit comprises:

an acquisition unit, configured to acquire a user key;

a filtering unit, configured to filter the signals received via the

interface, to obtain authorization information for a user;

a decryption unit, configured to perform decryption on the authorization information according to the user key, to obtain a de-scrambling key; and

5 a de-scrambling unit, configured to de-scramble the signals received via the interface according to the de-scrambling key.

24. The digital signal processing apparatus of claim 23, further comprising:

10 a communication interface module, configured to receive and transmit data which accords with a particular transport protocol.

15 25. The digital signal processing apparatus of claim 24, wherein the particular transport protocol comprises any one of Ethernet transport protocol, Cable Modem transport protocol, SmartCard transport protocol and wireless protocol.

26. The digital signal processing apparatus of claim 25, further comprising:

20 a access unit, configured to access data received via the communication interface module.

25 27. The digital signal processing apparatus of claim 26, wherein the de-scrambling unit transmits the de-scrambled signals via the interface.

28. The digital signal processing apparatus of claim 27, being a Conditional Access apparatus.

30 29. The digital signal processing apparatus of claim 25 or 28, further comprising:

a control unit, configured to generate control information according to user requirement;

wherein the control information may be transmitted via any one of the interface and the communication interface module.

30. The digital signal processing apparatus of claim 28, further comprising:

a control unit, configured to generate control information according to user requirement;

wherein the RF processing unit is further configured to transmit the control information.

31. The digital signal processing apparatus of claim 25, wherein the communication interface module is further configured to transmit the de-scrambled signals.

32. The digital signal processing apparatus of claim 11, further comprising:

a storage unit, configured to store signals received via any one of the interface and the communication interface module.

33. The digital signal processing apparatus of claim 11, further comprising:

an EPG information extracting and parsing unit, configured to extract and parse EPG information from the signals received via the interface;

wherein the interface transmits the parsed EPG information.

34. The digital signal processing apparatus of claim 11, further comprising:

a software downloading unit, configured to extract software data from the signals received via the interface.

35. The digital signal processing apparatus of claim 34, further comprising:

a software updating unit, configured to update the current software by using the extracted software data.

5 36. The digital signal processing apparatus of claim 34, wherein the software data is transmitted via the interface.

37. The digital signal processing apparatus of claim 12 or 19, further comprising:

10 a tuner control unit, configured to control the RF processing unit according to the control information received via the interface, so as to receive signals on a corresponding channel.

38. A data transfer method, comprising steps of:

15 (a) receiving data which accords with USB (Universal Serial Bus) specification;

(b) detecting the received data to determine whether to convert the received data into data which accords with a particular specification; and

20 (c) converting the received data into the data which accords with the particular specification when determining that the received data should be converted into the data which accords with the particular specification.

39. The data transfer method of claim 38, further comprising steps of:

25 (d) converting the transmission data which accords with the particular specification into data which accords with the USB specification; and

30 (e) transmitting the converted data which accords with the USB specification.

40. The data transfer method of claim 39, wherein the step (d) further comprises the step of:

packaging the transmission data into the data which accords with the USB specification.

5 41. The data transfer method of any one of claims 38 to 40, wherein the particular specification is MPEG specification.

10 42. The data transfer method of claim 41, wherein the step (d) further comprises the step of:

15 converting parallel synchronous transport data which accords with the MPEG specification into serial asynchronous data which accords with the USB specification;

20 wherein the data which accords with the USB specification includes integer multiple of packets which accord with the MPEG specification.

25 43. The data transfer method of claim 42, wherein the step (d) further comprises the step of:

20 converting the received serial asynchronous data which accords with the USB specification into parallel synchronous data which accords with the MPEG specification.

25 44. The data transfer method of claim 43, wherein any one of the data which accords with the USB specification and the data which accords with the MPEG specification comprises at least one of service data and control information, the control information being used for controlling operations of a device equipped with the interface.

30 45. The data transfer method of claim 44, wherein the service data comprises at least one of audio data and video data.

30 46. The data transfer method of claim 45, wherein the control information comprises at least one of information for implementing PnP function, information on resource allocation and information on the

transmission rate to be used.

47. The data transfer method of claim 46, wherein the control information may be transmitted in a data transfer mode of bulk data transfer or interrupt data transfer in the USB specification.
5